

MOTOR VEHICLE DIVISION STAFF PAPER

VEHICLE AFFORDABILITY¹ A LOOK AT THE DATA by Al Warner and Scott Kennedy

The issue of vehicle affordability is hotly debated. Without a doubt, people are paying more for a car (throughout this paper “car” is used to mean passenger cars and light trucks) today than they were in the past. In current dollar terms the average expenditure per car has risen from \$3,212 in 1967 to \$20,447 in 1997 (Attachment 1). In real terms, the expenditure has risen to \$9,297 (1967\$). While on the surface, this looks like a substantial increase, relative to other factors - especially consumer income - this increase is not as large as it seems. For example, in 1967, it took 21.1 weeks of the average family's earnings to buy a new car. Today, with much higher incomes than in 1967, families are spending 23.5 weeks.² An increase to be sure, but a large one?

Analysts and consumers can and will debate whether this increase is significant, and/or given the improved quality of vehicles over this period, whether this increase is justified. Many will argue that this very quality improvement makes today's vehicles a real bargain. This paper looks at vehicle prices in relation to consumer income and at price changes on particular, entry-level 4 and 6 passenger cars. The results indicate that it isn't just that vehicles are more expensive, but that consumers' incomes are under much more pressure than ever before.

At the heart of the debate is the question of whether people are voluntarily spending more on a car (i.e., buying more expensive vehicles or adding options), or are the car companies simply being greedy, or are the higher prices mainly the result of additional costs mandated by government regulations? The data examined for this report indicate that all of these have an impact, with consumer choice, perhaps playing the largest role.

Before going into the data, we need to look at the popular “more car per car” argument. This theory says that it isn't just that Manufacturer Suggested Retail Prices (MSRP) are increasing, but that consumers are ordering more options and thus inflating transaction prices. The argument implies that consumers are doing this voluntarily. While it is true that option spending is probably increasing, it is equally true that this behavior is not entirely voluntary. This is because of the recent introduction of “option packages” - i.e., grouping certain popular options into specially-priced packages .

¹This project was greatly assisted analytically by Dr. Edward B. Leviton and Randall E. Miller of the Motor Vehicle Division. Christine Ogura from Claremont-McKenna College, an intern in the Motor Vehicle Division during the summer of 1996, loaded all of the Personal Consumption Data which is the heart of this paper. We all are deeply appreciative for her work.

²Interestingly, this has not been a straight line increase. As illustrated in Attachment 1, this measure reached a high of 25.0 weeks in 1993 and 1994 and a low of 17.5 in 1973.

On the whole these packages benefit both the manufacturer and consumer. The manufacturer uses them to reduce complexity in the manufacturing process and thus reduce costs and improve profitability. The consumer benefits, because the options are offered at a lower price in the packages than if they were purchased separately. When analyzing price changes, options are important since they often add between 10%-20% of the final price of the car.

Option packages also have another effect. Although options are grouped in packages designed to reflect consumer purchasing patterns, they can also distort consumer preferences. While consumers may desire only some of the options in the packages, those options may only be available in packages and/or the packages are discounted in such a fashion that the consumer is enticed to buy the whole package. In addition, many dealers only order cars with the option packages, so that the sole option for a consumer wanting only part of the package is to place a special order for the car - a process that can add 6-8 weeks to the delivery time and thus discourages this approach³. Leases subsidized by the manufacturer also play a role in this phenomenon since these subsidies largely are on specially packaged vehicles. In addition, leasing allows consumers to buy higher-priced vehicles and more options than they might otherwise do, and thus clouds the effect of price increases and serves to upgrade consumers. So while manufacturers may say that consumers are voluntarily upgrading their vehicles, the manufacturers and dealers are strongly encouraging them to do so.

Option packages also impact the consumer's future preferences because, once a consumer owns an option, he/she rarely gives it up on the next purchase. Intermittent wipers, automatic transmissions, power mirrors, power seats, door locks and windows, etc., virtually have become "must have" items. These are "nice" items and no one likes to give up "nice" things. In other words, many items designated as options by the manufacturer are no longer optional to the consumer.

This is not meant to say that consumers are unwitting "dupes" of slick marketing staffs. Consumers clearly act of their own free will and within their budgets. All car manufacturers have stories about shortages of luxury options. Delivery times are frequently extremely long on popular vehicles with leather interiors and large V8 engines simply because there is not enough supplier capacity to meet demand. But, let's look at the data.

[NOTE: Before going on a brief note on rebates is in order. Rebates (or incentives) are used by manufacturers to stimulate sales of a particular model. They can be used to effect a price reduction without announcing a reduction which would reduce the base price used to set future prices. Rebates can be used to clear an oversupply at the end of a model year. They can be used to correct a new model's price which was set too high. They can be used to correct a temporary over supply. They can be used to

³It should be noted that all of the manufacturers have programs to significantly reduce this order-to-delivery time.

stimulate sales of fuel efficient cars to assist a company struggling to meet Corporate Average Fuel Economy (CAFE) standards. In short, they can be used for a variety of reasons, most of which are to clear the market of an over supply. Many argue that this is a sufficient reason to believe that prices are too high. In many instances this is true. This paper does not delve deeply into this point, except to note that rebates are a price reduction to meet a market condition by companies which have historically low return-on-sales ratios. In addition, the focus herein is on final transaction prices and thus reflects the rebates.]

The Comparable Car

As noted above, not only are consumers spending more, but they also are getting more. It is undeniable that today's vehicles are the best vehicles ever made. Higher quality materials, better sound insulation, more comfortable seats, more efficient drive trains, better suspensions and greatly improved fit and finish are among the more apparent improvements. To these quality improvements must be added the benefits derived from mandatory safety and emission control requirements. As demonstrated by data from the American Automobile Manufacturers Association (AAMA) ⁴the cost of these items is very high. (Data doesn't exist to measure the impact of the other quality improvements discussed above.)

To demonstrate the impact, AAMA uses the concept of the "comparable car" (Attachment 1). This is really the average transaction price of a car in 1967, adjusted annually for inflation and the cost of government safety and emission control requirements, as determined by the Bureau of Labor Statistics (BLS). The comparable car measure indicates that, while in dollar terms the cost of a car has risen, when measured against median family earnings, a family is actually spending less as a portion of earnings. For example, in 1967, the average family spent nearly 21 weeks of earnings on a car; in 1997 this had fallen to 10.7 weeks for the car adjusted for inflation and for safety and emissions equipment; and to 15.3 weeks for the car adjusted only for inflation. In unadjusted terms the average new car price rose from 21.1 weeks to 23.5 weeks in 1997 (in fact, it reached a high of 25.4 weeks in 1994), but, given the far greater quality of cars today and the additional options, this is hardly a surprising increase.

Price of Entry

Another way to look at the question of price increases is shown in Attachment 2, developed by the Commerce Department's Office of Automotive Affairs' Motor Vehicle Division to look at the "price of entry" into the new vehicle market. It addresses the question "if a person wanted to buy a new 4- or 6-passenger, 4-door car in 1967, how much would that person have to pay for the cheapest offering by each of the Big 3 and then what would that same cost be in 1997." (The last year for which data is available) The results are grouped by size. Only Big 3 products were examined because they are the only firms whose market presence has remained relatively constant over the period.

⁴The American Automobile Manufacturers Association (AAMA) was dissolved in 1998 and its statistical services are no longer available.

For the 4-passenger cars offered by the three marketing divisions shown, the price of a 4-passenger car in terms of both mean family income and per capita disposable personal income, has fallen. In the case of the 4 passenger vehicles, prices decreased modestly - the Chevy II accounted for 22.5% of annual mean family income in 1967 while the Geo Metro was 21.2% in 1997. In terms of per capita disposable income, the decrease has been more dramatic, falling from 68.8% in 1967 to 55.8% in 1997. Since the Geo Metro is a much smaller car than the Chevy II, a better measure might be the Valiant at 23% of family income in 1967 and the Neon at 20.4% in 1997.

However, in 6-passenger cars, the story is mixed. The prices of the Ford and Chevrolet models have gone up by about 10 points in both relative measures. The price of the Plymouth has gone up only slightly on the family income measure (25% to 26.7%) and has fallen on the per capita income scale (76.4% to 70.3%).

What accounts for this disparity between 4-and 6-passenger automobiles? Probably many reasons including: (1) a desire by the manufacturer to keep entry-level cars priced very low; (2) increased competition keeping base car prices low; and (3) an attempt by the manufacturers to increase sales of high mileage cars to meet CAFE requirements in a market that does not place a priority on fuel economy. Because of this pressure at the bottom end, there is some attempt on the part of the companies to earn a profit on the larger 6-passenger cars. While competition is also fierce at this level, in general, the market is more accepting of higher profits (through the resultant higher prices) on larger cars.⁵

So, it is possible for a person to buy a new car at about the same relative payout as in 1967. This should surprise the many people who believe firmly that prices have gone up substantially. Of even more surprise to these people, is to view these prices in real terms. Attachment 2 also shows the 1967 models adjusted only for inflation (not government regulatory costs). As can be easily seen by both of our measures, real prices have fallen by over 50% in both relative measures!

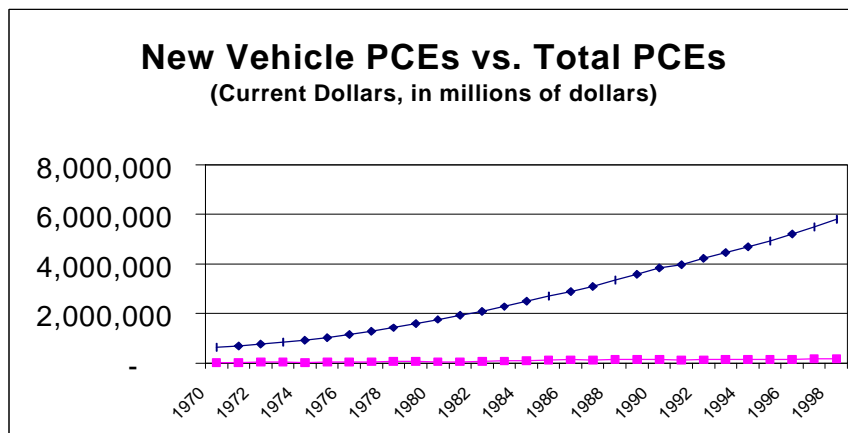
Other Impacts on Consumer Incomes

So what's going on? Why are people continuously complaining about high vehicle prices and why are they convinced that prices are not just higher, but outrageously so? Well, clearly in the real world, from the time a consumer purchases a new car until the next time they buy a car, prices do increase on the same car. This can be the result of changed option-loading or a significant move of the product from one market segment to another and perhaps an attempt by the manufacturer to recover a large investment in the new product. Also, since many people try to upgrade when they trade, they may end

⁵ This statement of course ignores higher-priced, smaller specialty cars (e.g., the Mustang) and focuses on mainstream vehicles. The price data used here shows the transaction price for cars actually purchased by consumers. It ignores all leased vehicles. This is a significant omission, but the BEA and BLS data does not allow these data to be identified.

up facing significantly higher prices than the last time they purchased a car.

The data indicate that the answer to the question about consumer perceptions may be that consumers' incomes are under more pressure than ever before. Motor vehicles, because of their relatively high unit prices, are a substantial "shock to the system" when they must be purchased - particularly since most buyers do not purchase vehicles as frequently as they did in the past and therefore, probably don't keep up with price changes in the interim. This perception is aggravated because the prices of many consumer items are perceived to have remained relatively static. Washers and dryers,



TV sets, refrigerators, computers, dishwashers are all perceived to have little or no price increases over the last 20 years.

Clearly many factors are interacting on consumer expenditures and consumer perceptions of vehicle affordability. One of them is that the average, car-buying American family has probably seen expenses on new "things" rise significantly. These "things" are new expenses which did not exist 10 years ago - cable TV with multiple outlets in the home and pay-per-view, cellular phones, multiple phone lines and outlets (in Washington, for example, the average home has about 2.5 phone lines), monthly computer payments/expenses (including on-line service charges), etc. All of these are individually \$25 to \$50 each, but could easily add up to \$150-\$200 or more per month. For many people this is, or nearly approaches, the level of a monthly car payment.⁶

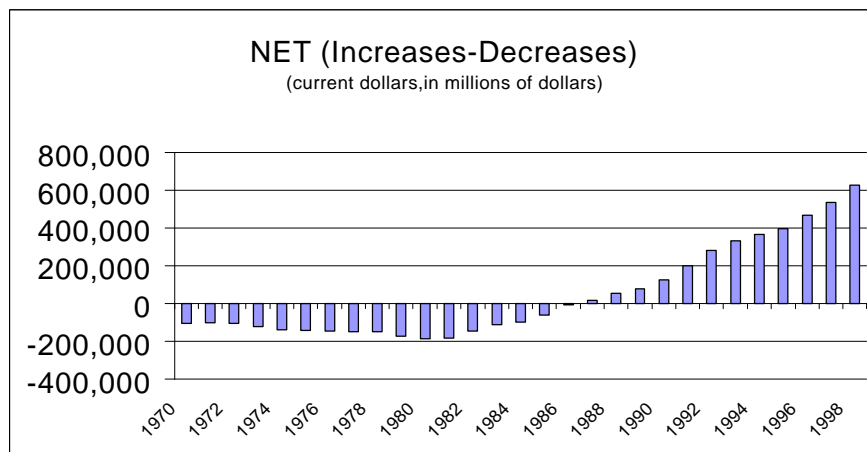
Personal Consumption Expenditures

This anecdotal evidence is supported by the Personal Consumption Expenditure (PCE) data developed by the Commerce Department's Bureau of Economic Analysis. As can be seen in this graph, current dollar PCEs have increased sharply from the fourth quarter of 1970 to the fourth quarter of 1998 (growing from about \$662 billion to \$5,935

⁶These expenses, of course, are on top of day care expenses for dual income families which, in Washington, run about \$750 per month (per child).

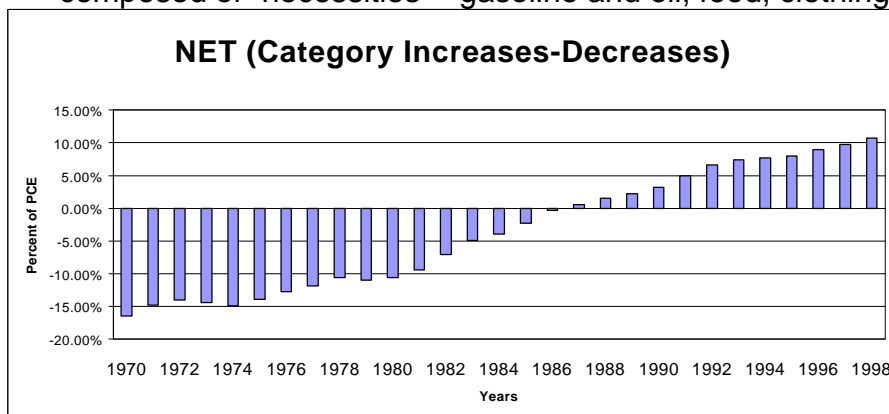
billion), while at the same time PCE expenditures on new motor vehicles (the line at the bottom of the graph) have grown from about \$20 billion to about \$195 billion. In percentage terms, expenditures on new motor vehicles have remained relatively constant at about 3-4% of total PCEs.

Further analysis of these data series shows that between 1970 and 1998, five non-automotive PCE categories have significantly increased while 5 have significantly decreased.⁷



As can be seen in these charts, the increases have significantly outweighed the decreases since 1985 in both percentage and dollar terms.

The composition of these groups is also interesting. The decreases were largely composed of “necessities” - gasoline and oil, food, clothing and shoes, fuel oil and coal

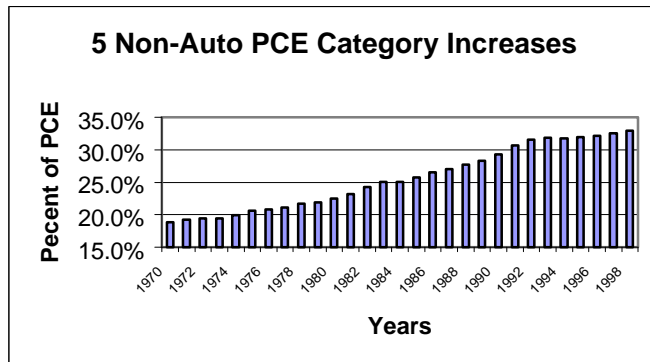


and personal care services. The categories of increases are largely “discretionary” purchases, with some notable exceptions. These include a recreation category; a religious and welfare group; and personal business services. The increases also include such non-

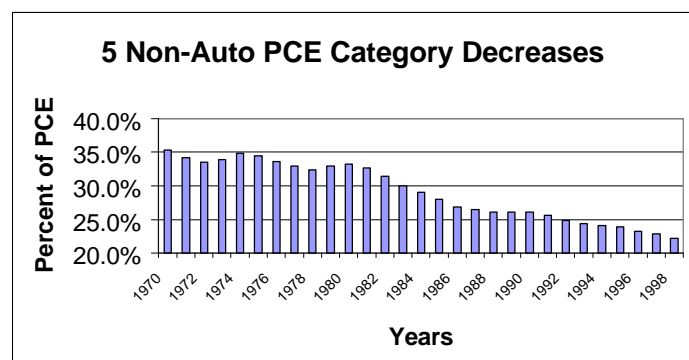
discretionary expenses as medical care and one category - an education category - which could fall into either category, but in many senses (particularly for those who can

⁷“Significance” was judged by relative significance within each category. For example, Personal Care Services moved from 1.69% of PCE to 1.04%, a 38.5% decrease and was included. However, Furniture and Household Equipment went from 5.51% to 5.3%, an 8.8% decrease, and was not included (see attachments 3-10).

afford a new vehicle) may have moved from the discretionary into the non-discretionary category over this period. Grouping these discretionary categories (not including higher education) shows that they jump sharply in the mid-'80's when home computers, big-screen TVs and other electronic goodies also took-off.

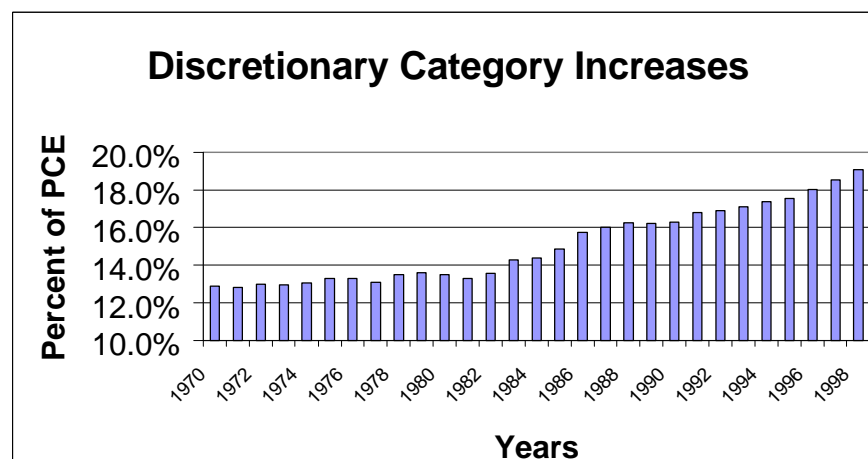


For those who can't afford the cost of new vehicles, the choices are limited. They could buy a cheaper, probably smaller, vehicle than they currently own, but we understand that the data don't indicate that consumer downsizing is going on to any significant extent. After all, if you need a six passenger automobile, you need a six passenger automobile. People could buy a cheaper, maybe not smaller, car and, a sizeable number of people are willing to buy what car nuts call "old tech" cars.



Disposable Personal Income and the “Shift”

Consumers could also buy a used car and apparently many are. This table shows total Disposable Personal Income (DPI), i.e., the amount of money people have available after taxes as estimated by BEA. It also shows DPI relative to the PCEs for both new and used cars. The fourth column sums the new and used car portions as a percent of DPI.



DISPOSABLE PERSONAL INCOME				
Year	DPI(\$B's)	NA/DPI	UA/DPI	TOTAL %
1980	1953.0	2.9	0.6	3.5
1985	2943.0	4.0	0.8	4.8
1990	4050.5	3.3	0.8	4.1
1991	4343.7	2.9	0.7	3.6
1992	4613.7	3.1	0.8	3.9
1993	4789.3	3.3	0.8	4.1
1994	5018.8	3.2	0.9	4.1
1995	5320.8	2.9	0.9	3.8
1996	5589.0	2.7	1.0	3.7
1997	5795.1	2.8	1.0	3.8
1998	6027.9	3.3	1.0	4.3

This table shows two things. The first is that the share of DPI spent on cars in 1998 was not as high as it was in 1985. This reflects the fact that a greater portion of peoples' incomes is being spent on non-auto items.

The second thing the table shows is that after the 1991 recession year, the portion spent on new cars increased and then declined to a level lower than 1991, and has recently begun another upswing. The portion spent on used cars increased, and then stabilized. This suggests that while new car expenditures are more cyclical, in line with the general "health" of the U.S. economy, used car expenditures are maintaining an increased percentage of expenditures (they have apparently leveled off around 1.0 percent at the current time.) This also suggests a shift of expenditures from new to used cars. Since many of the cars being traded in the 1990's were bought new in the 1980's, this further indicates a shift. In addition, the increasing importance of leasing has stimulated this shift by increasing the quality and supply of used cars.

Likewise if we go back to the PCE data, the amount of money people actually spend,

this shift is also illustrated. Both series also indicate that this shift occurred during a period of declining relative expenditures on new vehicles.

PERSONAL CONSUMPTION EXPENDITURES				
YEAR:QTR	PCE(\$B's)	NA/PCE	UA/PCE	TOTAL %
1980:4	1837	3.1	0.6	3.7
1985:4	2780	4.2	0.9	5.1
1990:4	3907	3.4	0.8	4.2
1991:4	4027	3.1	0.8	3.9
1992:4	4330	3.3	0.9	4.1
1993:4	4443	3.5	0.9	4.6
1994:4	4798	3.3	1.0	4.3
1995:4	4991	3.1	1.0	4.1
1996:4	5240	2.8	1.0	3.8
1997:4	5593	3.0	1.0	4.0
1998:4	5926	3.3	1.1	4.4

So, if this shift is occurring, who is doing it? Well, the demographic data necessary to understand how many people who previously bought a new car are now buying used cars, and the income level of those doing this shift, are almost non-existent publicly. However, the indicators which have emerged from the private sector show an interesting phenomenon. Used cars are no longer thought of as second best. Industry data indicates that the demographics of people buying 2-3 year old off-lease cars is exactly the same as people buying their new cars. In fact, consumers can even upgrade their choice of vehicle in the process - (e.g. in Nissan's case, trading in an Altima for an off-lease Maxima.)

CONCLUSION

While this data does not end the debate, it does show that consumer expenditures on non-automotive items have increased dramatically and therefore have made a new car purchase more difficult. It also supports the consumer perception that vehicles are more expensive than ever.

Consequently, even if you argue that the average new car price is rising because consumers are demanding "more car per car" or if you believe that the manufacturers are simply raising prices to increase their profits, it is clear that cars are competing with many other things for the family's disposable income. In fact, even if car prices were static, these other items would probably result in pressure on them to come down. It is difficult to imagine the American consumer ever saying that cars are affordable.